

SIM7020 Series_ EAT Environment &Compilation &Burning Guide

LWPA Module

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About Document

Version History

Version	Date	Owner	What is new
V1.00	2019.1.17	Yanan.Sun	First Release
			Add description for compiling on Linux
V1.01	2019.7.24	Yanan.Sun	Add support on SIM7020G
			Add debug method
V1.02	2020.6.10	Wenjie.Lai	All

Scope

This document applies to the following products

Name	Туре	Size (mm)	Comments
SIM7020C	NB1	17.6*15.7	Band 1/3/5/8
SIM7020E	NB1	17.6*15.7	Band 1/3/5/8/20/28
SIM7030	NB1	16*18	Band 1/3/5/8
SIM7060	NB1+GNSS	24*24	Band 5/8
SIM7020G	NB2	17.6*15.7	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85
SIM7060G	NB2+GNSS	24*24	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85



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1 Introduction

The architecture of SIM7020 is AP(Application Processor) + NBIoT Modem,for the AP part it's based on ARM Cortex-M4 Core and is running Free RTOS. SIMCom share part of the RAM\ROM memory, provides Embedded AT development which will utilize SIM7020 resources and provide interfaces to move external MCU functions inside SIM7020, as to save cost for customers.



For modem operation, customer can use APIs to send AT commands and receive response of corresponding AT command as following.

Embedded-AT



For peripheral (GPIO\Timer\UART\IIC\SPI\EINT\PWM .etc) operation, we also provide APIs and demo codes to customer for quick start with EAT.



* For details on SDK, please contact SIMCom technical support team (<u>support@simcom.com</u>).



2 Compiling environment

SIM7020 series EAT SDK can be compiled with default GCC on Linux OS and with MinGW cross-compilation tool on Microsoft Windows OS (Suggest newer than Win7).

2.1 Install the SDK build environment on Linux

SIM7020 EAT SDK can be compiled on any edition of Linux OS, the default GCC compiler provided in the SDK is based on the 32-bit architecture, the following description is based on the Ubuntu 18.04 (Linux version 4.15.18).

The following command is used to download and install the basic building tools on Ubuntu. sudo apt-get install build-essential

When using 64-bit Linux OS, there may be following compilation error occurs: /bin/sh: 4: tools/gcc/gcc-arm-none-eabi/bin/arm-none-eabi-gcc: not found

Need to install packages to support the 32-bit executable binary with following command: sudo dpkg --add-architecture i386 sudo apt-get update sudo apt-get install libc6-i386

2.2 Install the SDK build environment on Microsoft Windows

To build the SDK on Windows OS, need to install MinGW cross-compiler, SDK has integrated ARM GCC tool chain for Windows OS.

- 1) Download mingw-get-setup.exe from here
- 2) Launch the installer and click Install



mingw-get version 0.6.2-beta-20131004-1	inGW Installation Manager Setup Tool	5.00.000
Written by Keith Marshall Copyright © 2009-2013, MinGW.org Project http://mingw.org	mingw-get version	on 0.6.2-beta-20131004-1
Written by Keith Marshall Copyright © 2009-2013, MinGW.org Project http://mingw.org couroing_of yenc_ince), when yr wishaienrovecs, of upgrade your MinGW software installation.		*
Copyright © 2009-2013, MinGW.org Project http://mingw.org	Written	by Keith Marshall
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 Follow the on screen instructions and keep the default setting, click Continue to download the tool to C:\MinGW

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mi	ngw-get version 0.6.2-beta-2013	1004-1
	3	
SI	ep 1: Specify Installation Prefer	ences
Installation Directory		
C:\MinGW		Change
Unan Tabada an Orifina		
User Interface Options Both command line and is always supported; th	graphical options are available. e alternative only if you choose	The command line interface the following option to
User Interface Options Both command line and is always supported; the \overrightarrow{v} also install suppor Program shortcuts for la o just for me (the c \overrightarrow{v} in the start menu * selection of this opti	graphical options are available. e alternative only if you choose rt for the graphical user interfac aunching the graphical user inter current user), or O for all , and/or V on the deskto on requires administrative privile	The command line interface the following option to e. face should be installed l users * op. ge.

4) Click Continue after the download is complete



mingw	-get version 0.	6.2-beta-20131004-1	
		}	
Step 2: Downlo	oad and Set U	p MinGW Installation M	lanager
ownload Progress			
atalogue update complete	d; please chee	ck 'Details' pane for en	rors.
Processed 112	of	112 items	: 100 %
etaile		and the second	A
etaile IIC.tar.xz ngw-get: *** INFO *** set	up: installat	ion database updated	A

5) Select msys-base and mingw32-base from Basic Setup package list, and right click to bring up the menu options. Click Mark for Installation from the menu. Click Apply Changes from the Installation menu.

Installation Pa	kage Settings					
Basic Setup	Package	Class	Installed Version	Repository Version	Description	
All Packages	mingw-developer-tool	bin		2013072300	An MSYS Instal	lation for MinGW
	minow32-base	bin		2013072200	A Basic MinGW	Installation
	Unmark		1	5.3.0-2	The GNU Ada C	ompiler
	Mark for Installation			5.3.0-2	The GNU FORTE	AN Compiler
	Mark for Keinstallation			5.3.0-2	The GNU C++ 0	Compiler
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	Mark for Removal		Installed Files	Versions		
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6) Click Apply on the pop--up dialog windows.

Okay to proceed?	
Okay to proceed?	
The package changes itemised below will be implemented when you choose "Apply"	Defer Discard
0 installed packages will be removed	
o installed packages will be removed	
o installed packages will be relitived	and a second
52 new/upgraded packages will be installed	
52 new/upgraded packages will be installed 1ibpthreadgc-2.10-mingw32-pre-20160821-1-d11-3.tar.xz	
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7) When complete click Close to close the dialog windows.

All changes were applied successfully; you may now close this dial	ogue.
Close dialogue automatically, when activity is complete. Details	Close
<pre>install: dos2unix-7.3.2-1-msys-1.0.18-bin.tar.lzma installing dos2unix-7.3.2-1-msys-1.0.18-bin.tar.lzma install: coreutils-5.97-3-msys-1.0.13-bin.tar.lzma installing coreutils-5.97-3-msys-1.0.13-bin.tar.lzma</pre>	•

NOTE

- The folder name and file name in the SDK should not contain ', ', '[' or ']'.
- The project name should be less than 30 characters, or build error will happen as following:

arm-none-eabi-gcc.exe: error:
////out/mt2523 hdk/i2c communication with EEPROM dma/obj/projec
t/mt2523 hdk/hal examples/i2c communication with EEPROM dma/src/system mt2
523.o: No such file or directory

• MinGW should be installed in C:\MinGW, otherwise build error may occur.





3.1 Compile on Linux OS

1) cd to folder <SDK_Root>/simcom/build/,run ./sim7020x_SDK.sh



 It will take few minutes to build the SDK, when complete you can get TOTAL BUILD: PASS on the screen, it will generate app file in folder <SDK_Root>/out/simcom/sim7020/.



3.2 Compile on Window OS

1) Click msys.bat from C:\MinGW\msys\1.0, cd to folder <SDK_Root>\simcom\build, run ./sim7020x_SDK.sh



SUNYANAN /d cd SupportedCase/SIM7020_EAT/SIM7020_EAT/simcom/build/ anan.sun@MK-SUNYANAN /d/SupportedCase/SIM7020_EAT/SIM7020_EAT/simcom/build ./sim7020C_SDK.sh UE BUILD BOARD: simcom UE BUILD PROJECT: sim7020 platform=MINGW32_NT-6.1 /d/SupportedCase/SIM7020_EAT/SIM7020_EAT FEATURE = sim7020C_SDK_feature.mk Build CM4 Firmware... make -C project/simcom/apps/sim7020/GCC BUILD_DIR=/d/SupportedCase/SIM7020_EAT/S IM7020_EAT/out/simcom/sim7020/obj OUTPATH=/d/SupportedCase/SIM7020_EAT/SIM7020_E AT/out/simcom/sim7020 -j4 FEATURE=sim7020C_SDK_feature.mk /d/SupportedCase/SIM7020_EAT/SIM7020_EAT /d/SupportedCase/SIM7020_EAT/SIM7020_EAT/project/simcom/apps/sim7020/GCC project/simcom/apps/sim7020

 It will take few minutes to build the SDK, when complete you can get TOTAL BUILD: PASS on screen, it will generate app file in folder <SDK_Root>/out/simcom/sim7020/.



NOTE

 If get TOTAL BUILD: FAIL, please go to <SDK_Root>/output/simcom/sim7020/log and check err.log to find the reason.



4 Burning

1) Open SIM7020 QDL V1.00 Only for Update.exe, choose <SDK_Root>/out/simcom /sim7020/flash_download.cfg file as Config File.

SIM7	7020 QDL V1.01 C	only for Update		-		<
O US	I Time Speed 00: KB/s File : AT/1752B0	Com Setting Auto Sc Disable	g: anCON Manual Assign LongPress PowerKey T/out/cimcom/cim707	20/flash_download.cfg	load	
	Name	Length	File Path	zo/flash_download.cig	L0au	
	BootLoader	0x0000b65c	E:/SupportedCase/SIM7020_EA	T/1752B01SIM7	~	
START	, ,		0%			

2) Input COM port number which corresponding to UART2 on module, choose baudrate , click START then power on module , when complete reboot module. After than the app you downloaded will start running.Ee





5 Debug

For SIM7020 EAT, there are 2 ways for debugging:

1. UART interface

There are 2 UART ports on SIM7020x, customer can choose one of them to output logs, please refer to eat_trace API in demo codes.

2. USB interface

With MTK Genie tool, customer can get logs which are created by printf API in app, also can get modem trace log with Genie tool, please refer to SIM7020 Series_Genie_Logging_Tool_User_Guide_V1.0.pdf.

